CHAPTER 6
OPERATION OF PGS
LESSON PLAN 6

METHOD:

Conference, demonstration, and practical exercise

TIME ALLOTTED:

3.0 hours

COURSE PRESENTED TO:

a. BFV crews
b. Instructors
c. TSC personnel

TOOLS, EQUIPMENT, AND MATERIALS:

See Appendix A

PERSONNEL:

a. Primary instructor
b. Assistant instructor

INSTRUCTIONAL AIDS:

a. Overhead projector
b. Viewgraphs (Appendix E)

REFERENCES:

a. TM 9-6920-710-12&P-1
b. TM-9-2350-252-10-1/2
c. TM-9-2350-284-10-1/2
d. FM 23-1

APPENDICES:

Appendix A. Tools, Equipment, and Materials
Appendix B. Safety
Appendix C. TDRS Memory Card Setups
Appendix D. Setup of Training Area
Appendix E. Viewgraphs

6-1. INTRODUCTION. (5 minutes)

Note. Show Slide 1.

a. **Reason**. PGS is designed to provide BFV crews with a training device to conduct precision gunnery training. To use PGS to its full potential, you must know how to operate PGS in the various training modes.

Note. Show Slide 2.

b. **Training Objective**. Given an operational M2/M3 BFV with PGS installed and aligned, the crew will perform the following exercises:

(1) Panel gunnery
(2) Combat mode (force-on-force)
(3) Scaled gunnery
(4) Tracking training
(5) TOW only

c. **Procedure**. During this block of instruction we will cover the operation of PGS during training. The classroom portion of the class will cover important functions of PGS to consider during training. Each vehicle crew will have an assistant (small group) instructor for the practical exercise portion of this class.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE. (160 minutes)

Notes. 1. The primary instructor will release the student crews to their assigned assistant (small group) instructors for the practical exercise portion of this lesson.
2. Show Slide 3.

a. **PGS Training Modes.** PGS provides several modes of training that can be used for various types of exercises. The following training modes can be selected:

(1) **Panel gunnery.** Panel gunnery is conducted with target panels, equipped with retro reflector units and LTIDs.
(2) **Scaled gunnery.** Panel gunnery can be conducted with 1/10 scale targets. This provides long range gunnery training in ranges and training areas that do not have the desired distances.
(3) **Combat mode (force-on-force).** This training mode can be done with other TWGSS/PGS/MILES-equipped vehicles and retro reflector units.
(4) **Tracking training.** The system provides manipulation training with the use of tracking training mode.
(5) **TOW only mode.** This training mode enables the user to fire 25 mm and coax engagements with live ammunition while PGS is used to simulate TOW firing.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

Note. Show Slide 4.

b. **Transparency During Training.** PGS is designed to be fully integrated with the BFV. The crew is required to perform the same procedures as required during live fire gunnery.

Note. Show Slide 5.

(1) **BOT capability.** The burst on target can be used to adjust firing during target engagements.
(2) **Correct range.** To successfully engage a target, the gunner must apply the correct superelevation for each ammunition fired in order to hit the target.
(3) **Correct lead angle.** The correct lead angle for each ammunition type must be applied to hit a moving target or if firing on the move.

Note. Show Slide 6.

c. **TBOS Effects**. Visual effects of firing AT, HE, TOW, and coax are simulated in the gunner's and commander's sight in day and thermal modes. The effects simulated are:

(1) **Tracer simulation.** The tracer of AP, HE, TOW, and every fifth coax round are simulated. The correct burn time of each ammunition type is pre-programmed.
(2) **Burst simulation.** Burst on target and ground burst are simulated. Ground burst effects are smaller than target hit burst effects. The burst size is ammunition and range dependent.
(3) **Obscuration.** The obscuration of firing the TOW is simulated. The instructor can adjust the duration from 0-5 seconds.

Note. Show Slide 7.

d. **Tracer Template.** The visual effects of the TBOS simulation are controlled by a template. The following happens with TBOS effects when firing in the different areas.

Note. The template is a T80 frontal for TOW, a BMP frontal for AP and HE, and a kneeling soldier for coax.

(1) **Area A.** If area A is hit, tracer simulation is stopped. A burst on target indication is given. Burst on target indication is bigger than burst on ground indication.
(2) **Area B.** If area B is hit, tracer simulation is stopped prior to reaching target and burst on ground indication is given at the impact point between projectile and a simulated ground plane.

(3) **Area C.** If area C is hit, tracer simulation continues until the simulated projectile reaches maximum simulated range (if this happens prior to a ground hit) or hits the simulated ground plane.

(4) **Area D.** If area D is hit, tracer simulation stops at the top of the template or simulation continues (with tracer simulation switched off) until the ammunition reaches maximum simulated range or hits the simulated ground plane.

Note. Show Slide 8.

e. **Ammunition Simulation.** The ammunition of the BFV are simulated to the following ranges:

(1) AP is simulated to 1700 m.
(2) HE is simulated to 3000 m.
(3) TOW Basic is simulated to 3000 m.
(4) TWO 2 is simulated to 3750 m.
(5) 7.62 mm coax ammunition is simulated to 900 m.

Note. Show Slide 9.

f. **Result Presentation.** PGS has the following capabilities.

(1) **Numerical presentation.** This is used during exercises where immediate feedback is needed or desired.

(2) **Graphic presentation.** This is used for exercises where the presentation of the impact point in relation to the target outline is more important than numerical presentation.

(3) **Result presentation OFF.** When conducting gunnery training or combat mode (force-on-force) exercises where the crew should not see the results until after the exercise, the instructor can turn off the result presentation in the control panel. The results are still stored on the TDRS memory card for AAR.

g. **Results Provided by Control Panel.** The system provides both the results from engagements where a vehicle has fired and where a vehicle has been fired upon.

Note. Show Slide 10.

(1) **Fire result.** Elevation and azimuth impact point on the target is shown in relation to center of mass. The results are provided in meters with the resolution of 0.1 m. The actual range to the target is also provided together with an engagement evaluation.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

Note. Show Slide 11.

(2) **Target result.** Elevation and azimuth impact point on the vehicle is shown in relation to center of mass. The results are provided in meters with the resolution of 0.1 m. The aspect angle, type of round fired, and effect on the vehicle are also provided on the display screen.

Note. Show Slide 12.

h. **Engagement Result.** The control panel presents an evaluation of the engagement together with the actual hit coordinates and range to target. The following results are possible.

(1) **HIT.** The simulated round hit the target. The simulator assumes the target is either a T80 frontal for a TOW simulation, a BMP frontal for AP and HE, or a kneeling soldier for 7.62 mm coax rounds. If the control panel indicates a HIT, a MILES code is sent to allow the LTID to function.

Notes. 1. MILES message is sent at the impact point of the round.
2. MILES codes used for PGS are IAW the enhanced MILES code structure.

(2) **GROUND HIT.** A ground hit occurs if the ammunition falls short of the maximum range simulated for that ammunition type or falls short of the target. A ground hit is presented with the range of the actual ground impact.

(3) **MAX RANGE.** If maximum range is indicated on the control panel, the round fired did not pass a target with a retro reflector unit within the field of view of the transceiver unit.

(4) **MISSILE STALLED.** If the TOW is guided with large and jerky movements, the weapon system will lose contact with the missile. PGS indicates to the gunner that the missile has been guided incorrectly by terminating the simulation and presenting MISSILE STALLED on the control panel. The TDRS memory card stores this event for AAR.

(5) **MISSILE ABORTED.** If the simulated missile is aborted through the use of any of the vehicle's abort capabilities, this is indicated on the control panel through the message MISSILE ABORTED. The TDRS memory card stores missile aborts for AAR.

i. **Sound Indications.** The system uses sound to indicate to the crew that different events have taken place. The sound indications can be divided into firing system and target system sound indications.

Note. Show Slide 13.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(1) **Firing system sound indications.** For the firing of ammunition the following sound indications are heard through the vehicle intercom:

(a) Firing of the 25 mm gun
(b) Firing of the TOW missile
(c) Firing of the coax gun

Note. Show Slide 14.

(2) **Target system sound indications.** When PGS is fired upon from other simulator-equipped vehicles, the vehicle intercom indicates the following to the crew:

(a) NEAR MISS = 2 tones. If the BFV had a near miss, the vehicle intercom indicates with 2 tones.
(b) HIT (no kill) = 4-6 tones. If the BFV is hit by a round but not killed, the vehicle intercom indicates with 4-6 tones.

Note. WEAPON KILL and MOBILITY KILL are also indicated with 4-6 tones.

(c) KILL = continuous tone. If the BFV is hit and killed, a continuous tone for 30 seconds is heard in the vehicle intercom. A kill tone is also indicated if CGUN KILL is transmitted to the vehicle.

Notes. 1. In combat mode, a killed BFV must be restored with the CGUN. The ammunition load is returned to the pre-programmed load.
2. If the BFV is killed during panel gunnery, the target system autoactivates after 10 seconds and the kill indications stop. The ammunition load is returned to the pre-programmed load.

j. **Target System Visual Indications.** The target system effects are indicated by the strobe lights in the retro detector unit (RDU). The following visual indications are given by the target system:

Note. Show Slide 15.

(1) **NEAR MISS = 2 strobe light indications.** If a target is exposed to a near miss, the RDUs will flash two times with the strobe light of each RDU.
(2) **HIT = 4-6 strobe light indications.** If a target is exposed to a hit, the RDUs will flash 4-6 times with the strobe light of each RDU.

Note. WEAPON KILL and MOBILITY KILL are also indicated with 4-6 strobe indications.

(3) **KILL = continuous strobe light indication.** If the target is killed by a round or a CGUN, the RDUs will flash continuously. This indication will continue until the system is reactivated.

Notes. 1. If the vehicle is killed during panel gunnery, the target system autoactivates after 10 seconds and the kill indications stop. The tank ammunition load is returned to the pre-programmed load.
2. In combat mode, a killed BFV must be restored with the CGUN. The ammunition load is returned to the pre-programmed load.

Note. Show Slide 16.

k. **Target System HIT Functions.** PGS simulates three different types of vehicle hits. It is important the crew reacts properly to each type.

Note. During force-on-force exercises, the tank commander must take the correct action for the type of hit indicated on the control panel.

(1) **HIT.** The vehicle has been hit but not damaged or killed, therefore it can continue to fight.

Note. MOBILITY KILL will only be indicated if the tracks are hit.

(2) **HIT with MOBILITY KILL.** The vehicle has been damaged and immobilized. If a mobility kill is indicated, the crew must stop within 30 seconds or the vehicle will be permanently killed. During a mobility kill, the crew can continue to engage targets from a stationary position.

Note. WEAPON KILL will only be indicated if the gun area or sights are hit.

(3) **HIT with WEAPON KILL.** The vehicle has been hit by a round and the weapon system has been damaged. The vehicle can still maneuver, but the capability to fire has been removed.

(4) **KILL.** The vehicle has been hit and the target system evaluates the round to have killed the vehicle. The vehicle must be stopped (when the screw considers this action safe) and they must await further instructions.

Note. Show Slide 17.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

l. **Tamper During Combat Mode (Force-on-Force) Exercises.** If PGS is tampered with or if something malfunctions, this will be indicated as tamper to the crew. The crew has 30 seconds to correct the failure on the system. If not corrected, PGS will consider itself Not Mission Capable (NMC) for a force-on-force exercise. The following tamper indications are provided:

(1) **Sound indication.** The vehicle intercom informs the crew to check the control panel.
(2) **Tamper pop-up.** A tamper pop-up appears on the control panel display screen to inform the crew that there is something that must be corrected.
(3) **Visual indication.** The retro detector units of PGS indicate with flashes if something is incorrect.

Note. Show Slide 18.

m. **Tamper During Panel Gunnery Exercises.** If PGS is tampered with or if something malfunctions, this is indicated as a BIT error to the crew. A BIT indication removes the capability to fire until corrected. The following indications are provided:

(1) **Sound indication.** The vehicle intercom informs the crew to check the control panel.
(2) **BIT pop-up.** An error pop-up appears on the control panel display screen to inform the crew that there is something wrong with the system.
(3) **Visual indication.** PGS RDUs indicate with flashes if something is incorrect.

Notes.
1. The primary instructor now releases the student crews to their assigned assistant (small group) instructors for the practical exercise portion of this lesson.
2. Prior to students' arrival, ensure that an assistant instructor is assigned to each training station.
3. Direct students to their appropriate training station.
4. Each assistant instructor is to conduct a safety briefing for his small group IAW Appendix B.
5. Whenever possible, have the students serve as demonstrators during small group instruction. Have one student read the procedures while another student performs the task. To ensure all students get equal hands-on time, rotate the reading and performance responsibilities.
6. The assistant instructor discusses and clarifies the procedures as required and reinforces the training objective.
7. Ensure training area is set up IAW Appendix D for each training mode selected.
8. Ensure TDRS memory card is set up IAW Appendix C for each training mode selected.

Warning. Accidental firing of the 25 mm gun could cause injury or death. Ensure weapon is clear prior to training.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

Warning. The moving and operation of vehicle during the practical exercise portion of this lesson must be done under the instructor's supervision.

Notes. 1. Instruct the crew on how to transfer ammunition using the upload function in the control panel when turret ammunition is depleted.
2. The instructor can replenish ammunition loads with the RESET setting on the CGUN.

n. **PGS Operation.** PGS can perform gunnery in five modes: panel gunnery; combat mode; scaled gunnery mode; TOW only mode; and tracking training mode.

Notes. 1. Ensure that TDRS memory card is set up for panel gunnery mode IAW Appendix C.
2. Set up targets and BFV's for panel gunnery mode IAW Appendix D.

(1) **Panel gunnery mode.** Fire on target and verify the following:

(a) Fire AP single shot at each target. Check tracer, ground burst, and burst on target.
(b) Fire HE single shot at each target. Check tracer, ground burst, and burst on target.
(c) Fire coax at each target. Check tracer, ground burst, and burst on target.
(d) Fire AP low rate at each target. Check tracer, ground burst, and burst on target.
(e) Fire HE low rate at each target. Check tracer, ground burst, and burst on target.
(f) Fire AP high rate at each target. Check tracer, ground burst, and burst on target.
. (g) Fire HE high rate at each target. Check tracer, ground burst, and burst on target.
(h) Fire AP until low ammo is indicated. Check that it is impossible to fire. Press low ammo and continue to fire until no ammunition remains.
(i) Select RM (remaining ammo) on control panel. Select AP and move ammo from hull to turret. When completed, verify that AP can fire.
(j) Fire and verify that results given by control panel are easily understood.
(k) Check that there is a residual round when selecting between AP and HE.
(l) Select and fire TOW missile tube 1 and then tube 2. Verify that no missile remains in either tube.
(m) Select RM (remaining ammo) and move one missile into both tube 1 and tube 2. Fire and verify function.
(n) Fire TOW and verify obscuration, ground burst, hit burst, and tracer.
(o) Fire TOW and abort using abort functions of vehicle.
(p) Fire TOW and guide missile with very large movements. Verify MISSILE STALLED.
(q) Verify that TOW results given by control panel are easily understood.
(r) Select GD (graphics display) on control panel. Fire all ammunition types and verify result presentation.

(s) Use a CGUN to fire KILL, RESET, TEST, and TIME MARK at your vehicle. Verify control panel menus and sound and light indications.
(t) Fire ENABLE CONTROL with CGUN. Upload ammunition manually to turret and hull.
(u) Select display position. Verify control panel displays vehicle position as determined by the remote systems interface (RSI).
(v) Disconnect left-front RDU. Verify control panel indication. Try to fire.

Notes. 1. Ensure that TDRS memory card is set up for combat mode IAW Appendix C.
2. Position target vehicles for combat mode IAW Appendix D.
3. Use the CGUN to activate target vehicle if killed.

(2) **Combat mode.** Fire on target vehicle and verify the following:

Note. Point out to students that during combat mode PGS compensates for the retro reflector unit position.

(a) Select SI (simulation) and RM (remaining ammo). Fire AP at a PGS- equipped target vehicle. Aim at center of mass and verify that system compensates for retro reflector offset in combat mode (result is approximately 0.0 in. elevation and azimuth).
(b) Verify target NEAR MISS, HIT, and KILL visual indications.
(c) Have target vehicle crew cover all hull defilade detector units (HDDUs) exposed to firing vehicle. Fire into hull and verify that vehicle is not killed.
(d) Have another vehicle fire at you to verify NEAR MISS, HIT, and KILL indications on control panel, vehicle intercom, and RDU strobe lights.
(e) Fire at the track of the target vehicle and verify MOBILITY KILL.

Caution. Do NOT use force when connecting or disconnecting cables.

Note. During tamper demonstration, disconnect RDU for less than 30 seconds and then longer than 30 seconds to demonstrate tamper kill.

(h) Disconnect left-front RDU. Verify control panel indications.

Notes. 1. Ensure that TDRS memory card is set up for scaled gunnery IAW Appendix C.
2. Position targets and vehicles for scaled gunnery mode IAW Appendix D.
3. Use the CGUN to upload ammunition.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(3) **Scaled gunnery mode.** A target placed at 100 m will simulate 1000 m when 1/10 scale is selected. Select 1/10 scale application. Fire and verify the following:

Note. Point out to students that the panel target placed at 100 m must be 1/10 the size of the target it represents, otherwise it will not represent the correct target size for 1000 m.

(a) Verify that all targets are 1/10 the distance from actual range.
(b) Verify scaled procedures replicate actual vehicle procedure.

Notes. 1. Ensure that TDRS memory card is set up for TOW only mode IAW Appendix C.
2. Position targets and vehicles for TOW only mode IAW Appendix D.
3. Use the CGUN to upload ammunition.
4. Move the transceiver unit to the TOW bracket.
5. Realign for the new configuration. Align using AT (alignment TOW) menus. Gun alignment is not required.

(4) **TOW only mode.** This training mode is used in conjunction with live fire of 25 mm and coax weapons. This mode also enables the gunner to fire TOW with turret drive in manual mode. Fire and verify the following:

(a) Verify TOW can be fired with manual mode selected.
(b) Verify that TOW missiles can be moved from hull to turret.
(c) Verify that PGS simulation of 25 mm and coax weapons is inactive to allow for live fire of actual weapons.

(5) **Tracking training mode.** Tracking training exercises can be performed in panel gunnery mode against targets with retro reflectors installed in center of mass, or in combat mode against targets with turret-installed retro reflector units.

(a) Vehicle preparations.

Note. The range knob must be set to 0 m for all tracking training exercises.

Set range knob to 0 m.

Notes. 1. Prior to start of the training exercise, ensure that the TDRS memory card has been properly set up for tracking training IAW Appendix C.
2. Prior to the start of the training exercise, prepare a HMMWV with retro reflector units installed on center of mass. Instruct driver to drive a parallel path approximately 600 m away.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

(b) Alignment. Perform normal alignment procedures.

(c) Operation of tracking training mode (25 mm gun and coax).

1. Select AP, HE, or coax.
2. Arm the weapon.
3. When gunner's or commander's palm switch is pressed, tracking data collection is started.

4. Tracking data is collected until one of the following events occurs:

Note. Inform students that trigger activation will provide the tracking result which is stored on the TDRS memory card for AAR.

a. The gun trigger is activated for firing main gun or coax.

Note. Inform students that if the tracking time elapses, no tracking values will be stored on the TDRS memory card for AAR.

b. The tracking time has elapsed. (Time is selected prior to exercise by instructor).

Note. Inform students that if the palm switch is released, no tracking values will be stored on the TDRS memory card for AAR.

c. Gunner's or commander's palm switch is released.

5. Set the SAFE/ARM switch to SAFE.

Note. Demonstrate AAR of tracking training to the students on the TDRS computer unit.

6. Repeat tracking training exercise by starting at step (c) 1.

(d) Operation of tracking training mode (TOW).

1. Select TOW and missile tube 1 or 2.
2. Arm the weapon.
3. Aim and fire. Collection of tracking data has started.

Note. Inform students that trigger activation will provide the tracking result which is stored on the TDRS memory card for AAR.

6-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

4. Tracking data is collected until one of the following events occurs:

Note. Inform students that if the tracking time elapses no tracking values will be stored on the TDRS memory card for AAR.

a. The tracking time has elapsed. (Time is selected prior to exercise by instructor).
b. Missile has reached the target.
c. Missile has reached its maximum operational distance.
d. Missile has stalled or aborted.

5. Set the SAFE/ARM switch to SAFE.

Note. Demonstrate AAR of tracking training to the students on the TDRS computer unit.

6. Repeat tracking training exercise by starting at step (c) 1.

Notes. 1. Have students practice tracking training against a moving target.
2. Evaluate tracking training exercise using the TDRS computer unit.

6-3. FINAL REVIEW. (5 minutes)

a. **Student Questions.**

Note. Show Slide 19.

b. **Summary of Main Teaching Points.**

(1) Panel gunnery
(2) Combat mode (force-on-force)
(3) 1/10 scaled gunnery
(4) TOW only
(5) Tracking training

Note. Show Slide 20.

c. **Closing Statement.** To get the maximum training value from the PGS equipment, you must be able to correctly operate the system in the various training modes.

APPENDIX A
TO LESSON PLAN 6

OPERATION OF PGS

TOOLS, EQUIPMENT, AND MATERIALS

Listed equipment is one per vehicle crew, except as noted.

1. M2/M3 BFV with PGS installed
2. TM 9-6920-710-12&P-1
3. T80 frontal target with target lifter placed at 1500 m
4. BMP frontal target with target lifter placed at 800 m
5. Infantry (coax) target with target lifter placed at 300 m
6. 1/10 scale T80 frontal target with target lifter placed at 300 m
7. 1/10 scale BMP frontal target with target lifter placed at 120 m
8. 1/10 scale infantry (coax) target with target lifter placed at 60 m
9. Retro reflector unit (one for each target used)
10. LTID (one for each target used, if available)
11. TDRS memory card, programmed IAW Appendix C
12. TDRS computer unit (one per class)
13. Training area with minimum of 1500 m of maneuver space
14. HMMWV with retro reflector unit installed on left and right side center of mass

APPENDIX B
TO LESSON PLAN 6

OPERATION OF PGS

SAFETY

Listed general safety regulations are to be strictly enforced during the performance of this lesson.

1. Mount and dismount vehicle over left front or through the back ramp.
2. Maintain 3 points of contact while on top of vehicle.
3. No smoking within 50 m of vehicle.
4. Do not go over or under gun barrel.
5. LASER SAFETY: Do not view transceiver unit with optics from a distance of 25 m or closer.
6. Ensure turret traverse lock is engaged before entering turret or working in or around turret.
7. Ensure vehicle master power switch and turret power switch are set to OFF position during all cable connections.
8. No cables should be connected or disconnected by untrained personnel.
9. Ensure proper hearing protection is worn if using pyrotechnics.
10. If TOW ATWESS device is used, ensure area is clear 50 m to the rear and 25 m to the sides.

APPENDIX C
TO LESSON PLAN 6

OPERATION OF PGS

TDRS MEMORY CARD SETUPS

The TDRS memory card used for the practical exercise portion of this lesson is set up with the following basic data. Each vehicle crew is provided a card prior to practical exercise portion of class.

C-1. SETUP FOR PANEL GUNNERY.

Application:	M2	M3
Exercise Area:	Select exercise area used	Select exercise area used
New Ammo:	Yes	Yes
First Insert Only:	No	No
Main Weapon:		
AP Turret:	70 rounds	70 rounds
HE Turret:	230 rounds	230 rounds
AP Hull:	120 rounds	240 rounds
HE Hull:	480 rounds	960 rounds
Load Time:	0 seconds	0 seconds
Upload Time:	60 seconds	60 seconds
COAX Weapon:		
7.62 Turret:	800 rounds	800 rounds
7.62 Hull:	1540 rounds	3750 rounds
Upload Time:	60 seconds	60 seconds
Missiles Weapon:		
Tube 1 Turret:	1 missile	1 missile
Tube 1 Hull:	3 missiles	5 missiles
Tube 2 Turret:	1 missile	1 missile
Tube 2 Hull:	2 missiles	5 missiles
Upload Time:	60 seconds	60 seconds
Exercise Type:	Panel gunnery	Panel gunnery
Tracer:		
Tracer On:	Yes	Yes
Burst On:	Yes	Yes
Obscuration:	1 second	1 second

C-1. SETUP FOR PANEL GUNNERY (Con't).

Presentation:		
Audio:	Yes	Yes
Control Panel Presentation:	Yes	Yes
Firing:	Full scale	Full scale
Dispersion:	No	No
User Data:	Input crew data	Input crew data

C-2. SETUP FOR COMBAT MODE (FORCE-ON-FORCE).

Application:	M2	M3
Exercise Area:	Select exercise area used	Select exercise area used
New Ammo:	Yes	Yes
First Insert Only:	Yes	Yes
Main Weapon:		
AP Turret:	50 rounds	50 rounds
HE Turret:	50 rounds	50 rounds
AP Hull:	100 rounds	100 rounds
HE Hull:	100 rounds	100 rounds
Load Time:	0 seconds	0 seconds
Upload Time:	60 seconds	60 seconds
COAX Weapon:		
7.62 Turret:	200 rounds	200 rounds
7.62 Hull:	1540 rounds	3750 rounds
Upload Time:	60 seconds	60 seconds
Missiles Weapon:		
Tube 1 Turret:	1 missile	1 missile
Tube 1 Hull:	3 missiles	5 missiles
Tube 2 Turret:	1 missile	1 missile
Tube 2 Hull:	2 missiles	5 missiles
Upload Time:	60 seconds	60 seconds
Exercise Type:	Combat mode	Combat mode
Tracer:		
Tracer On:	Yes	Yes
Burst On:	Yes	Yes
Obscuration:	1 second	1 second
Presentation:		
Audio:	Yes	Yes
Control Panel Presentation:	No	No
Firing:	Full scale	Full scale
Dispersion:	Yes	Yes
User Data:	Input crew data	Input crew data

C-3. SETUP FOR SCALED GUNNERY.

Application:	M2	M3
Exercise Area:	Select exercise area used	Select exercise area used
New Ammo:	Yes	Yes
First Insert Only:	No	No
Main Weapon:		
AP Turret:	70 rounds	70 rounds
HE Turret:	230 rounds	230 rounds
AP Hull:	120 rounds	240 rounds
HE Hull:	480 rounds	960 rounds
Load Time:	0 seconds	0 seconds
Upload Time:	60 seconds	60 seconds
COAX Weapon:		
7.62 Turret:	800 rounds	800 rounds
7.62 Hull:	1540 rounds	3750 rounds
Upload Time:	60 seconds	60 seconds
Missiles Weapon:		
Tube 1 Turret:	1 missile	1 missile
Tube 1 Hull:	3 missiles	5 missiles
Tube 2 Turret:	1 missile	1 missile
Tube 2 Hull:	2 missiles	5 missiles
Upload Time:	60 seconds	60 seconds
Exercise Type:	Panel gunnery	Panel gunnery
Tracer:		
Tracer On:	Yes	Yes
Burst On:	Yes	Yes
Obscuration:	1 second	1 second
Presentation:		
Audio:	Yes	Yes
Control Panel Presentation:	Yes	Yes
Firing:	Scaled gunnery	Scaled gunnery
Dispersion:	No	No
User Data:	Input crew data	Input crew data

C-4. SETUP FOR TOW ONLY.

Application:	M2	M3
Main Weapon:		
AP Turret:	Inactive	Inactive
HE Turret:	Inactive	Inactive
AP Hull:	Inactive	Inactive
HE Hull:	Inactive	Inactive
Reload Time:	Inactive	Inactive
COAX Weapon:		
7.62 Turret:	Inactive	Inactive
7.62 Hull:	Inactive	Inactive
Reload Time:	Inactive	Inactive
Missiles Weapon:		
Tow Turret:	2 missiles	2 missiles
Tow Hull:	5 missiles	10 missiles
Reload Time:	10 seconds	10 seconds
Exercise Type:	Tow only mode	Tow only mode
Tracer:		
Tracer On:	Yes	Yes
Burst On:	Yes	Yes
Obscuration:	1 second	1 second
Presentation:		
Audio:	Yes	Yes
Control Panel Presentation:	Yes	Yes
User Data:	Input crew data	Input crew data

C-5. SETUP FOR TRACKING TRAINING.

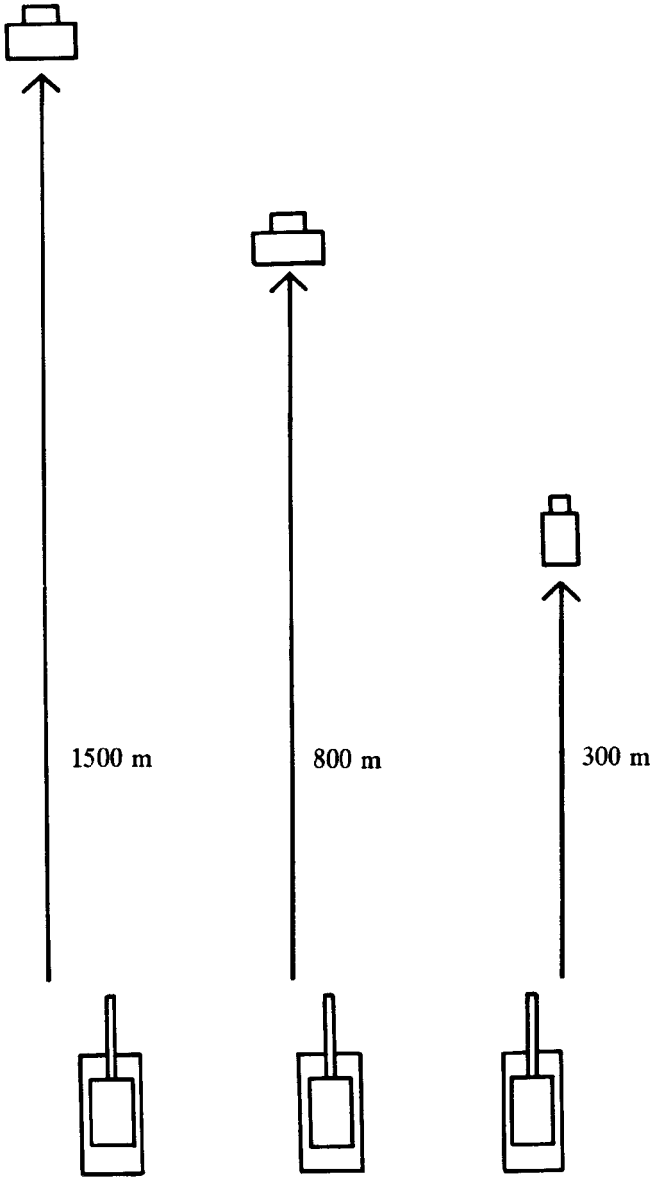
Application:	M2	M3
Exercise Area:	Select exercise area used	Select exercise area used
New Ammo:	Yes	Yes
First Insert Only:	Yes	Yes
Main Weapon:		
AP Turret:	70 rounds	70 rounds
HE Turret:	230 rounds	230 rounds
AP Hull:	120 rounds	240 rounds
HE Hull:	480 rounds	960 rounds
Load Time:	0 seconds	0 seconds
Upload Time:	60 seconds	60 seconds
COAX Weapon:		
7.62 Turret:	500 rounds	500 rounds
7.62 Hull:	800 rounds	800 rounds
Upload Time:	60 seconds	60 seconds
Missile Weapon:		
TOW Turret:	2 missiles	2 missiles
TOW Hull:	5 missiles	10 missiles
Upload Time:	15 seconds	15 seconds
Exercise Type:	Panel gunnery	Panel gunnery
Tracer:		
Tracer On:	No	No
Burst On:	No	No
Obscuration:	0 seconds	0 seconds
Presentation:		
Audio:	No	No
Control Panel Presentation:	No	No
Firing:	Tracking training	Tracking training
Tracking Time:	15 seconds/1.0 mil	50 seconds/1.0 mil
Dispersion:	No	No
User Data:	Input crew data	Input crew data
Event:	Tracking training	Tracking training

APPENDIX D
TO LESSON PLAN 6

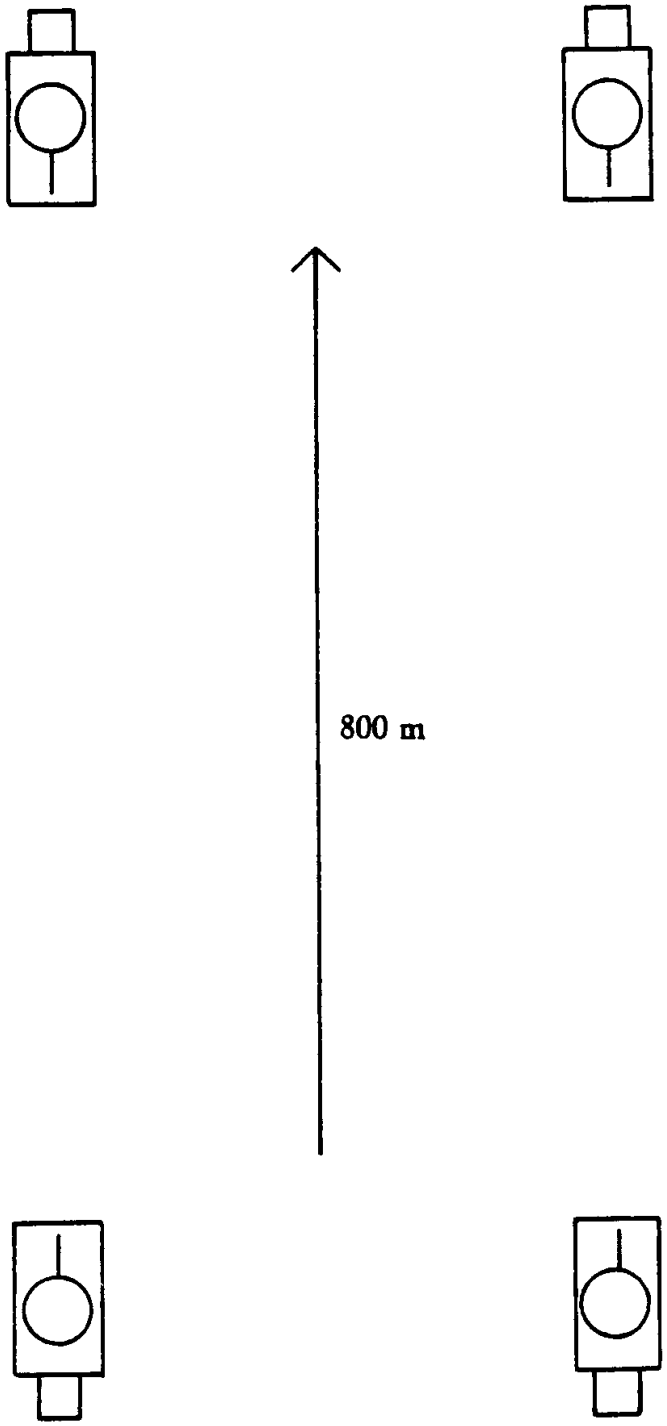
OPERATION OF PGS

SETUP OF TRAINING AREA

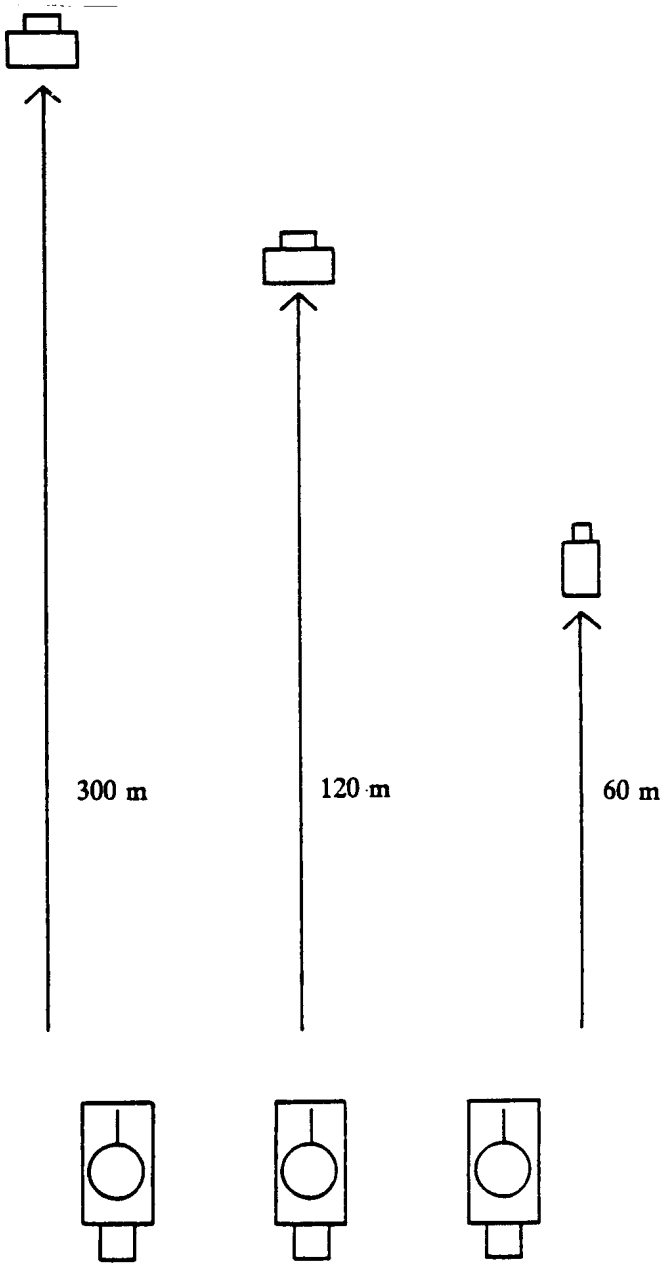
D-1. PANEL GUNNERY AND TOW ONLY.



D-2. COMBAT MODE (FORCE-ON-FORCE).



D-3. PANEL GUNNERY AND TOW ONLY.



APPENDIX E
TO LESSON PLAN 6

OPERATION OF PGS

VIEWGRAPHS